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Attitudes, perception of physical education's objectives and self-competence in secondary school students. Comparison of according to their BMI

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Literature

Overweight and obesity concern an increasing number of citizens in all industrial countries. They are currently considered as an epidemic that could bring major health problems in a near future (WHO, 2006). Belgium is also confronted to that problem as 15% of the children are overweight (Piette, Parent, Coppieters, Favresse, Bozelmans, Kohn & De Smet, 2003). The same authors showed that the proportion of overweight adolescents remained stable between 1994 and 2002 even if all actors of education perceive an increase of the prevalence of adiposity. Nevertheless, the situation is worrying, justifying the attention currently provided to limit the risks of a dramatic evolution.

Based on its preventive or curative roles in the control of body fat (Welk & Blair, 2000), physical activity is now recognized as a priority and must be promoted (U.S. Department of Health and Human Services, 1996). The recent multisectoral strategy elaborated by WHO/CDC (2005) underlines that schools and PE teachers are indisputable partners in the development of an active lifestyle in young people. For most health authorities, they should be directly involved in the battle against obesity. On the other hand, several authors pointed out that physical educators should minimize the problem (Gard & Wright, 2001; Green, 2004; Kirk, 2006).

Whatever the opinion about the role that PE might play in obesity control, it would be generally accepted that PE is identified as the cornerstone for physically active lifestyle (Tappe & Burgeson, 2004). These authors underled that this status was in concurrence with an increased pressure for academic accountability.

According to the context of the class, characteristics of facilities and content of the PE programme, PE lessons failed often to reach the physical activity requirements that have been recognized as determining for health (Fairclough & Stratton, 2005). That means that physical educators' work should be integrated in an overall school project aiming to increase the amount of physical activity of all people belonging to the school community. The concept of active-school has been developed (Cale, 1997). Pate, Davis, Robinson, Stone, McKenzie and Young (2006) pointed out that schools are able to adopt effective strategies to increase physical activity of their students. They proposed policy and practice recommendations which are now endorsed by public health, medical and educational authorities.

A key variable that might contribute to the success of any project aiming to improve physical activity deals with the enjoyment of the participants (Weiss, 2000). Moreover, perception of competence directly influence attitudes and is a determining variable according to its role in motivation (Duda, 1986). Perception of competence is related to students' involvement in PE classes (Carreiro da Costa, Peireira, Diniz & Piéron, 1997; Cloes, Motter, Ledent, & Piéron, 2002). Even if some practitioners say that overweight pupils do not have motivation problems in PE, we do not know if BMI presents some relationships to attitudes towards PE. Literature shows that BMI is negatively correlated with self-perception (Raustorp, Stahle, Gudasi, Kinnunen, & Mattson, 2005). Moreover, Olsely, Booth and Chey (2004) showed that body composition affected fundamental movement skills among children

and adolescents. According to that, overweight children and youth might suffer ridicule and teasing from their peers and could opt out activities and limit their involvement while they should be more active to encounter the physical activity requirements (USDHH & USDA, 2005).

Several publications propose practical information to adapt PE teaching process to obese students (Mourrier & Devoise, 2001; Olivier, Garrigues, Rubio, Cassagne, Tauber & Rivière, 2004). These strategies are determining according to the potential effect that an increasing involvement in PE lessons can have on the weight control of overweight and obese students. It appeared that one additional hour of PE reduced BMI among girls (Datar & Sturm, 2004). Moreover, BMI percentiles of primary school pupils involved in exercise-oriented classes were significantly lower than those from pupils in non-exercise-oriented classes (Zirali & Döring, 2004). On the contrary, Cawley, Meyerhoefer & Newhouse, 2005) pointed out that PE time has no detectable impact on youth BMI. Even if the available data do not provide clear trends, it would be interesting to identify more precisely motivational characteristics of overweight and obese students in PE settings. Knowing better their attitude towards PE as well as their perceived competence would help physical educators to understand how to encourage them to be physically active.

Objectives

This study aimed to determine if students' attitudes towards school and PE differ according to their BMI. Moreover, we wanted also to verify if students differing according to their BMI assign distinct objectives to PE as well as to compare their self perception of competence in PE.

Method

Four general and two vocational secondary level schools out of the 36 located in the Liège area were randomly chosen to be involved in the study. Directors were informed about the project and allowed us to collect data among their students. One school asked consentement to the parents (it is not necessary in Belgium). In each school, our goal was to gather data from 25 girls and 25 boys for each of the six grade levels (students aged between 12 and 18). Two of the researchers met youth during PE lessons. They proposed a questionnaire and measured students' height and weight. They proposed a questionnaire and measured students' height and weight. The same calibrated measurement system was used for all classes. The morphological data was taken by a researcher of the same gender than the students (simple gender PE classes). This was a specific requirement imposed by the education supervisor. The questionnaire comprised 25 closed-ended questions proposing four-level Likert scales or check lists. This paper will focus on selected variables: (a) the affective component of attitude towards physical education («Usually, physical education lessons in school… 4= I love, 3= I like, 2= I dislike, 1= I hate»), (b) the cognitive component of attitude towards physical education («For me, physical education at school is…4= very important, 3= important, 2= less important, 1= not important at all»), (c) the perceived competence («Usually, in physical education… 4= I am really able, 3= I am able, 2= I am weak, 1= I am really weak»), (d) the affective and cognitive components of attitude towards school, (e) the perceived level of involvement in PE («Usually, in PE lessons, you are intensively involved… 4= Always, 3= Often, 2= Sometimes, 1= Never»), (f) the perceived importance of eight objectives of PE («In your opinion, physical education is a useful way to… 4= Very important, 3= Important, 2= Less important, 1= Not important at all»). These scales were used

by Cloes et al. (2002) and Ledent, Cloes and Piéron (1997) in similar school contexts. The students needed a mean of 10 minutes to fulfil the questionnaire.

BMI (W/H^2) was used to determine the body composition. Students were compared according to three categories of BMI (underweight, normal weight, overweight + obese) using tables adapted to the < 20 year old Belgian youth (VUB-KUL, 2004).

1,200 questionnaires have been collected in general schools; 600 in vocational schools. After a first analysis, several questionnaires were discarded according to the poor quality of answers (students ticking the boxes on the same side of the scale or writing inappropriate comments …). The 1,061 remaining questionnaires in the general schools represented 28% of their overall population. In the vocational schools, only 98 questionnaires were selected (10% of the overall population). We decided to meet 30 additional students proposing them verbal assistance to get a better rate of answers. Finally, the database comprised answers from 1189 students. Data were processed using the 2006 Statistica software. The X^2 test was used to determine the influence of the variables. We also used the test of comparison of two proportions to analyse of the difference between subgroups. The limit of .05 for significance has been chosen.

Results and discussion

After presenting BMI categories in students, we will propose the most interesting results among the analyzed motivational aspects focusing on differences according to student's characteristics.

BMI of the students

Data showed that the distribution of the students corresponded to a good ranking within the European countries (IOTF, 2005). Some differences were identified between girls and boys (Table 1). More boys than girls presented high BMI while female students were often classified in the underweight category. Significant differences between genders appeared since 15. It is possible to consider that boys are less attentive to weight control than girls. In girls, overweight increased according to age (X^2: 40.86; $p < .0001$). The picture provided in our study is similar to the results of a large health enquiry conducted in Belgium five years ago (Piette et al., 2003).

Table 1 – Categories of BMI

	All (%)	Girls (%)	Boys (%)	p
Underweight	11.5	15	8.1	.0002
Normal	78.9	78.1	79.7	ns
Overweight	9.3	6.6	11.9	.0017
Obese	0.3	0.3	0.3	ns

Attitude towards school

At least 3 students out of 4 love or like school. According to the common opinion about the lack of interest of adolescents towards school, that finding is encouraging. Boys were less enthusiast than girls about school. That difference is often underlined and has been linked to a more "scholar" approach of girls. That difference was pointed out at each age. It was statistically significant for normal weight and overweight students ($p \leq .0103$). Figure 1 shows that affective component of attitude towards school differed in opposite way according to the gender and BMI. In boys, a decreasing trend was pointed out according to the degree of adiposity while the opposite appeared in girls. These situations existed in general and vocational schools but did not reach to statistical level ($X^2 \leq 1.40$; $p > .05$). The design of the study does not allow us to propose sound explanation. Finally, as it was pointed out in other

studies (Delfosse, Cloes, Ledent, & Piéron, 1994), we noticed a slight but clear decrease of the proportion of students presenting a positive attitude towards school through schooling.

The cognitive component of attitude towards school revealed that almost all students consider it at least as important (Figure 1). Only one statistical difference was identified: less underweight boys mentioned positive opinions than their female classmates ($p = .044$).

Attitude towards PE

Affective and cognitive components of attitude towards PE are systematically lower in girls than in boys (Figure 2). That finding is consistent with international data (Silverman & Subramamian, 1999). It should encourage researchers and practitioners to develop strategies aiming to change the situation in girls. In fact, these poor attitudes towards PE might be set in parallel with the lower rates of physical activity pointed out in girls and women (European Opinion Research Group, 2003). Globally, it seems that attitude towards PE decreases as the adiposity increases (Figure 2). The differences are not statistically significant ($X^2 \geq .76$; $p > .05$ but we noticed that underweight boys tended to appreciate more PE than their overweight classmates ($p = .09$).

Attitude towards PE tended to decrease as girls and boys become older. Students with a normal BMI showed a more stable attitude across the time but no statistical significant trend has been evidenced.

Findings do not support the hypothesis proposing that fatter students would develop less positive attitudes towards PE. Teaching strategies providing opportunities to practice to

all students might explain that situation as well as the non competitive climate recommended by the PE programmes in Wallonia (Ministère de la Communauté française, 2000). Cloes, Demblon, Pirottin, Ledent and Piéron (1999) pointed out that PE teachers were ready to deal with the presence of overweight students in their classes and to take into account their individual characteristics.

Perceived competence and involvement

Self perception in PE differed according gender and category of BMI (Figure 3). Girls had a less positive opinion of themselves than boys whatever their BMI ($P < .05$). Moreover, there was a statistically significant decrease of the self perception as the BMI increases. Overweight boys and girls were proportionally less to consider themselves as competent in PE compared to their classmates ($p \leq .024$). No clear trends were identified according to the students' age. These findings indicate that differences in performance of locomotors skills (Okely et al., 2004) and fitness (Fogelholm, Stigman, Huisman & Metsämuuronen, 2007) pointed out according to weight status might be combined to dramatic differences in opinion of the youth about themselves. As perception of competence is a key of motivation, our findings underline that additional support should be provided to overweight students in order to help them to build a more positive view of their skills. Proposing individualized objectives and emphasizing personal achievement would be effective strategies.

According to the subgroup, 60.7 to 76.4% of the students considered to be well involved during their PE lessons (Figure 4). Normal weight boys considered them to be more involved than their male overweight classmates ($p = .01$) and normal weight girls ($p = .02$).

The absence of clear differences between students would support the opinion of some PE teachers considering that students' adiposity does not influence the behaviour of the youth.

Objectives of PE

Without surprise, "Enjoyment" was the objective considered as very important by most of the students (Figure 5). It underlines that despite all efforts of the educational authorities to provide PE an official role in the development of competencies, the course is still perceived by the students as an opportunity to disconnect from the cognitive load requested by the school. It is noteworthy that PE teachers themselves and schools directors did not disregard that objective (Mees, Renard, & Carlier, 1988). On the other hand, it is interesting to note that "Health" was considered as a very important objective of PE by 6 students out of 10. When one considers that PE is not officially in charge of health education in Wallonia, this means that it benefits to positive beliefs and should provide a greater emphasis on that aspect. Only 37 % of the students identified "Fitness" as a very important PE objective. If that finding is combined to the fact that only one fourth of them pointed out the role of PE for sport education, it evidences that students' opinions are differing to the objectives determined by the official programmes (Ministère de la Communauté française, 2000). It is not difficult to understand the motivation's problem reported by some PE teachers (Cloes, Ledent, Delfosse & Piéron, 2001).

No clear trends appeared from the comparison of the subgroups (Figure 6). In both genders: (1) "Health" seemed to take a greater place in overweight students; (2) "Fitness" was lower in overweight category (X^2 : 5.77; $p = 0.56$); (3) "Friendship" was higher in overweight; (4) "Skill learning" was higher in "normal" students; (5) "Relaxation" (stress

management) decreased according to BMI. When considering students despite of their BMI, “Enjoyment” and “Relaxation” in both genders and “Fitness” in girls remained at the same proportion whatever the age while other objectives showed a decreasing trends that could indicate that students loose their positive representations about PE when they become older, confirming the evolution of the attitudes. Very few strong trends can be identified according the BMI: the three categories of students presented similar lines.

Findings indicate that students’ adiposity does not have an apparent influence on the identification of PE objectives in adolescents. Nevertheless, as students seemed not really aware of the priorities given to the course, PE teachers would emphasize more and more the role that they want to provide to their teaching activity explaining it to the students and proposing activities corresponding to the goals which are declared.

Conclusions

The main finding of our study deals with the identification of a clear link between adiposity category and perceived competence in PE. Even if that relationship seemed not to influence other motivational aspects such as attitudes towards school and PE, perceived involvement in PE lessons or PE objectives, we consider that PE teachers should be attentive to the weight status of their students and carefully analyze its physical, motoric, psychological and social impacts. Their role consists to point out immediately changes that might affect the students’ behaviour. Moreover, they should contribute to avoid alteration of the overweight students’ self image by proposing learning tasks/objectives that could allow overweight youth to feel well during physical activity. Underweight students did not seem to be affected by their weight status. On the contrary, being thin they would feel themselves more competent

and should be encouraged to participate in physical activities and adopt a lifelong healthy lifestyle. It would be casier to keep it than to modify poor habits.

References

Cale, L. (1997). Promoting Physical Activity through the Active School. *The British Journal of Physical Education*, 28, 1, 19-21.

Carreiro da Costa, F., Pereira, P., Diniz, J. & Piéron, M. (1997). Motivation, perception de compétence et engagement moteur des élèves dans des classes d'éducation physique. *Revue de l'Education Physique*, 37, 2, 83-91.

Cawley, J., Meyerhoefer, CD. & Newhouse, D. (2005). *The Impact of State Physical Education Requirements on Youth Physical Activity and Overweight*. NBER Working Paper No. 11411. Retrieved from Internet on April 2, 2006: http://www.nasulgc.org/foodsociety/meeting05/cawley_etal_nberwp05.pdf

Cloes, M., Demblon, S., Pirottin, V., Ledent, M. & Piéron, M. (1999). *Traitement différencié des élèves en éducation physique. Solutions proposées par des enseignants en réponse à diverses situations*. In, G. Carlier, C. Delens & J.P. Renard (Eds.), Actes du colloque AFRAPS-EDPM «Identifier les effets de l'intervention en motricité humaine», CD-Rom. Louvain-la-Neuve: AFRAPS-EDPM.

Cloes, M., Ledent, L., Delfosse, C. & Piéron, M. (2001). Physical education teachers' perception of pupils' motivation. In: M.K. Chin, L.D. Hensley, & Y.K. Liu. (Eds.),

Innovation and application of physical education and sports science in the new millennium - An Asia-Pacific Perspective. Hong Kong: Hong Kong Institute of Education, 319-328.

Cloes, M., Motter, P., Ledent, M. & Piéron, M. (2002). Analysis of variables related to intrinsic motivation in a boys' physical education class. *Avante*, 8, 1, 1-14.

Datar, A. & Sturm, R. (2004). Physical Education in Elementary School and Body Mass Index: Evidence from the Early Childhood Longitudinal Study. *American Journal of Public Health*, 94, 9, 1501-1506.

Delfosse, C., Cloes, M., Ledent, M. & Piéron, M. (1994). Attitude vis-à-vis de l'école chez des enfants en âge d'école primaire, participant ou non à un programme scolaire d'activités physiques quotidiennes. *Revue de l'Education Physique*, 34, 2-3, 77-88.

Duda, J. (1986). A cross-cultural analysis of achievement motivation in sport and the classroom. In, L. VanderVelden, & J. Humphrey (Eds.), *Current selected research in the psychology and sociology of sport*. New York: AMS Press, 115-134.

European Opinion Research Group (2003). *Special Eurobarometer 183-6/Wave 58.2. Physical Activity*. Retrieved from Internet on May 2007: http://ec.europa.eu/public_opinion/archives/ebs/ebs_183_6_en.pdf

Fairclough, S. & Stratton, G. (2005). Physical education makes you fit and healthy. Physical education's contribution to young people's physical activity levels. *Health Education. Theory & Practice*, 20, 1, 14-23.

Fogelholm, M. , Stigman, S., Huisman, T. & Metsämuuronen, J. (2007). Physical fitness in adolescents with normal weight and overweight. *Scandinavian Journal of Medicine & Science in Sports*, 9.

Gard, M. & Wright, J. (2001). Managing Uncertainty: Obesity Discourses and Physical Education in a Risk Society. *Studies in Philosophy and Education*, 20, 535-549.

Green, K. (2004). Physical education, lifelong participation and "the couch potato society". *Physical Education and Sport Pedagogy*, 9, 1, 73-86.

International Obesity Task Force (2005). *EU Platform on Diet, Physical Activity and Health*. Brussels: IOTF. Retrieved from Internet on June 15, 2005: http://europa.eu.int/comm/health/ph_determinants/life_style/nutrition/documents/iotf_en.pdf

Kim, J., Must, A., Fitzmaurice, G., Gillman, M., Chomitz, V., Kramer, J, McGowan, R. & Peterson, K. (2005). Relationship of Physical Fitness to Prevalence and Incidence of Overweight among Schoolchildren. *Obesity Research,* 13, 1246-1254.

Kirk, D. (2006). The 'obesity crisis' and school physical education. *Sport, Education and Society*, 11, 2, 121-133.

Ledent, M., Cloes, M. & Piéron, M. (1997). Les jeunes, leur activité physique et leurs perceptions de la santé, de la forme, des capacités athlétiques et de l'apparence. *Sport*, 159/160, 90-95.

Mees, V., Renard, J.P. & Carlier, G. (1998). Objectifs et fondements pédagogiques de l'éducation physique scolaire. Etude de cas auprès de directeurs d'établissements secondaires en Belgique francophone. *Revue de l'Education Physique*, 38, 1, 25-31.

Ministère de la Communauté française (2000). *Compétences terminales et savoirs requis en éducation physique* [Final attainment levels and obtained knowledge in physical education] Bruxelles : Administration générale de l'Enseignement et de la Recherche Scientifique.

Mourier, J.L & Devoize, T. (2001), *L'élève obèse en EPS: l'exemple de l'obésité*. Dossier n°62. Paris : Editions EPS.

Okely, A, Booth, M. & Chey, T. (2004). Relationships Between Body Composition and Fundamental Movement Skills Among Children and Adolescents. *Research Quarterly for Exercise and Sport*, 75, 3, 238-247.

Olivier, I, Garrigues, E., Rubio, D., Cassagne, M., Tauber, M. & Rivière, D. (2004). *Les aptitudes partielles en EPS. Un exemple : l'obésité*. Académie de Toulouse/RéPOP. Retrieved from Internet on May 17, 2007: http://pedagogie.ac-toulouse.fr/eps/obesite.htm

Pate, R., Davis, M., Robinson, T., Stone, E., McKenzie, T. & Young, J. (2006). Promoting Physical Activity in Children and Youth: A Leadership Role for Schools: A scientific Statement From the American Hearth Association Council on Nutrition, Physical Activity, and Metabolism (Physical Activity Committee) in collaboration with the Councils on Cardiovascular Disease in the Young and Cardiovascular Nursing. *Circulation*, 114, 1214-1224.

Piette, D., Parent, F., Coppieters, Y., Favresse, D., Bozelmans, C., Kohn, L. & De Smet, P. (2003). *La santé et le bien-être des jeunes d'âge scolaire: Quoi de neuf depuis 1994?* Bruxelles : ULB-PROMES.

Raustorp, A., Stahle, A., Gudasic, H., Kinnunen, A. & Mattsson, E. (2005). Physical activity and self-perception in school children assessed with the Children and Youth-Physical Self-Perception Profile. *Scandinavian Journal of Medicine & Science in Sports*, 15, 126-134.

Silverman, S. & Subramamiam, P.R. (1999). Student attitude toward physical education and physical activity. A review of measurement issues and outcomes. *Journal of Teaching in Physical Education*, 19, 1, 97-125.

Tappe, M.K. & Burgeson, C.R. (2004). Physical Education: A Cornerstone for Physically Active Lifestyles. *Journal of Teaching in Physical Education*, 23, 4, 281-299.

U.S. Department of Health and Human Services. (1996). *Physical Activity and Health: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.

U.S. Department of Health and Human Services (2001). *The Surgeon General's call to action to prevent and decrease overweight and obesity*. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General. Retrieved from Internet on April 2, 2006: http://www.surgeongeneral.gov/topics/obesity/calltoaction/toc.htm

US Department of Health and Human Services (HHS) & US Department of Agriculture (USDA) (2005). *Dietary Guidelines for Americans, 2005*. Retrieved from Internet on May 17, 2007: http://www.health.gov/dietaryguidelines/dga2005/document/pdf/Chapter4.pdf

VUB-KUL (2004). *Courbes de croissance 2-20 ans*. Retrieved on January 18, 2006 from Internet: http://www.vub.ac.be/groeicurven/files/2-20040916-NP2-20M.pdf and http://www.vub.ac.be/groeicurven/files/2-20040916-NP2-20F.pdf.

Weiss, M. (2000). Motivating Kids in Physical Activity. *President's Council on Physical Fitness and Sports Research Digest*, 3, 11.

Welk, G. & Blair, S. (2000). Physical Activity Protects against the Health Risks of Obesity. *President's Council on Physical Fitness and Sports Research Digest*, 3, 12.

WHO (2006). *Obesity in Europe*. Retrieved from Internet on April 2, 2006: http://www.euro.who.int/obesity

WHO/CDC (2005). WHO Physical Activity Strategy: An Action Plan for Promotion/Implementation. Retrieved from Internet on January 29, 2006: http://www.who.int/moveforhealth/publications/mfh_miami_planaction_feb05.pdf

Ziroli, S. & Döring, W. (2004). Overweight and Obesity Among Pupils at Primary Schools with a Strong Sport Profile and a Daily PE Class in Berlin. *International Journal of Physical Education*, 41, 2, 77-84.

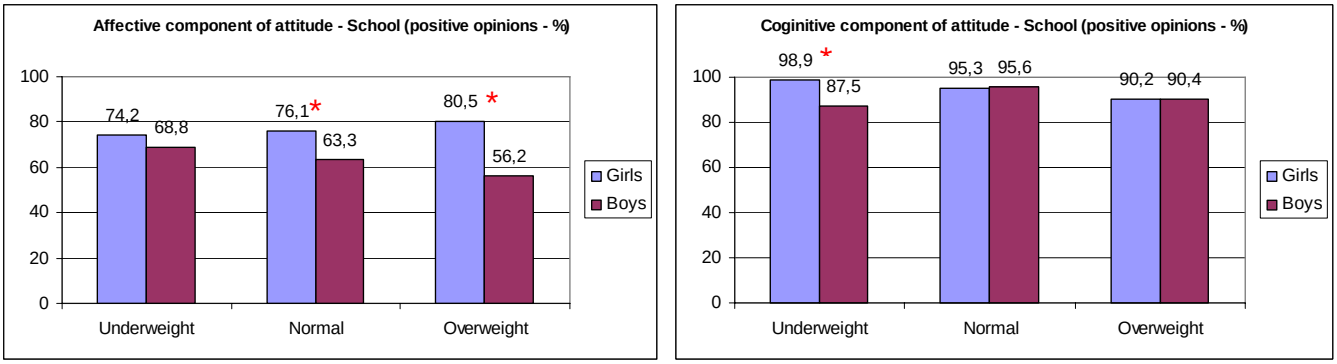

Figure 1 – Attitude towards school

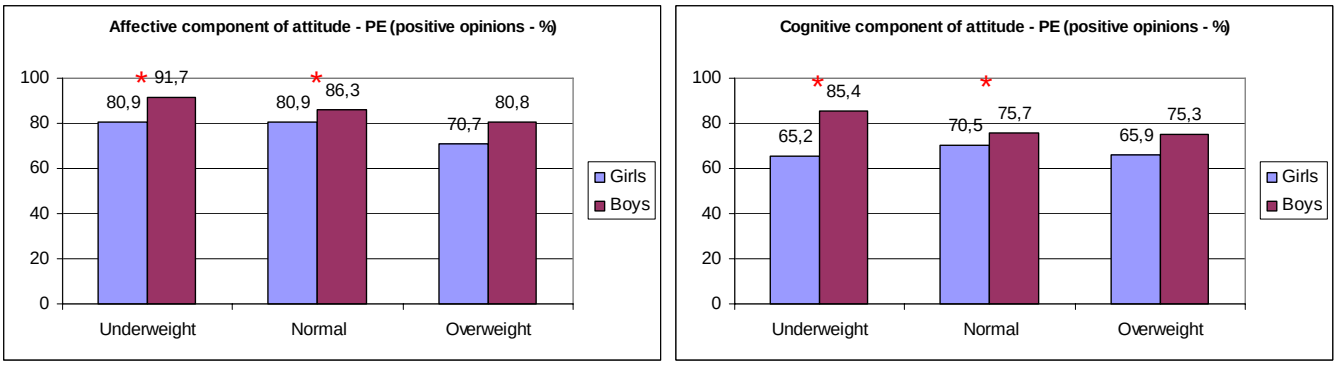

Figure 2 – Attitude towards physical education

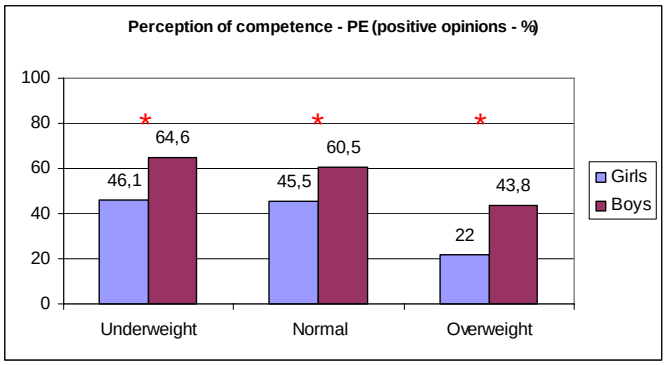

Figure 3 – Perceived competence in PE

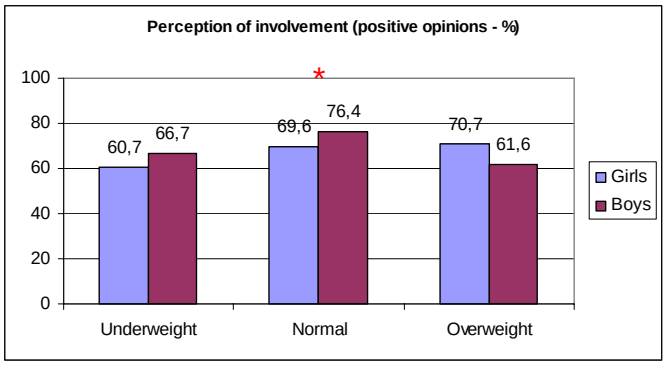

Figure 4 – Perceived involvement in PE

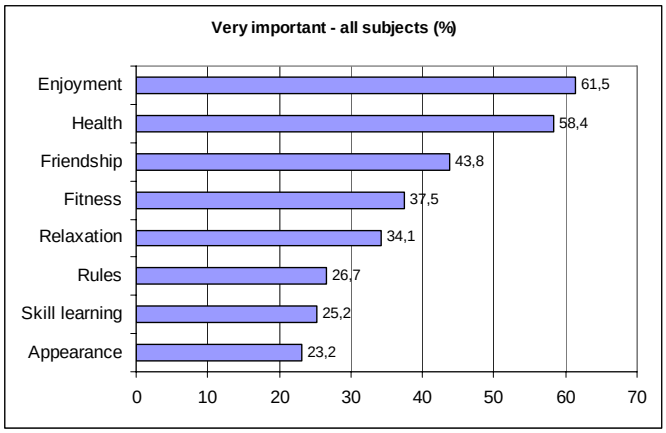

Figure 5 – Perceived PE objectives

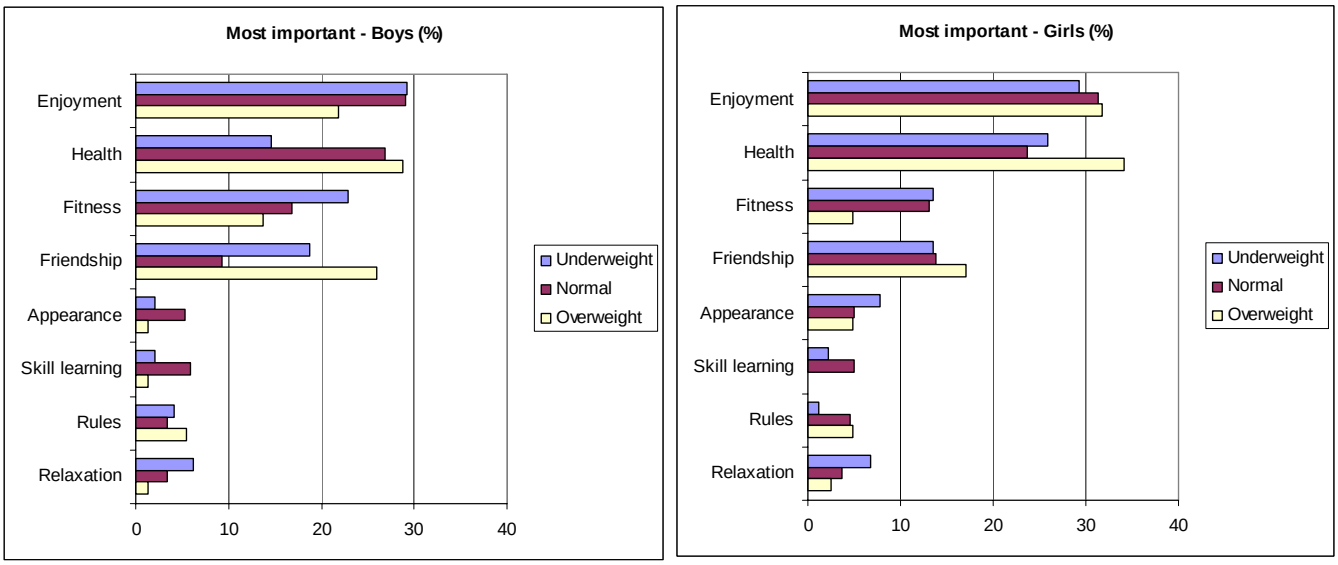

Figure 6 – Perceived PE objectives in boys and girls